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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte GRENVILLE J. ARMITAGE

Appeal 2008-004803
Application 09/824,960
Technology Center 2400

Decided: September 4, 2009

Before JAMES D. THOMAS, LEE E. BARRETT, and STEPHEN C. SIU, *Administrative Patent Judges*.

SIU, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

This is a decision on appeal under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 1-14. We have jurisdiction under 35 U.S.C. § 6(b).

We reverse.

Invention

The invention relates generally to a technique to enable mobile nodes or hosts to communicate with other nodes associated with a wired information network, notwithstanding changes in the mobile hosts' points of attachment to the network (Spec. 1). This technique includes identifying a first interface of a home router and the mobile hosts with corresponding unicast network addresses, and identifying a second interface of the home router with a corresponding unicast network address (*id.* at 3-4). The first interface of the home router and the mobile hosts are assigned corresponding group addresses according to a given relation with respect to the unicast network addresses (*id.* at 4). Unicast addresses of packets received at the second interface and destined to members of the subnet, are mapped to the group addresses assigned to the members of the subnet (*id.*).

Independent claim 1 is illustrative:

1. A method of supporting a mobile host on an information network configured for multicast routing, comprising:

defining a subnet (U1) of the network that includes one or more mobile hosts and a first interface of a home router in the network, and identifying the first interface and the mobile hosts with corresponding unicast network addresses (U1.x);

identifying a second interface of the home router with a corresponding unicast network address (U2.x);

assigning the first interface of the home router and the mobile hosts corresponding group addresses (Mx) according to a defined relation with respect to said unicast network addresses;

mapping, at the second interface of the home router, unicast addresses of packets received at the second interface and

destined to members of the subnet (U1), to the group addresses (Mx) assigned to the members of the subnet;

linking the mobile hosts with the network at corresponding points of attachment; and

sending a request from a given mobile host to join a group corresponding to a group address assigned to the given mobile host each time the mobile host links with the network at a new point of attachment, thereby enabling routers in the network to track the mobile host as it moves its link with the network from one point of attachment to another, and to route unicast packets originating from a host outside the subnet and destined to a given mobile host, by way of a virtual link defined between the home router and the given mobile host.

References

The Examiner relies upon the following references as evidence in support of the rejections:

Reid	US 6,131,120	Oct. 10, 2000
Harvey	US 6,189,039 B1	Feb. 13, 2001

C. Perkins, *IP Mobility Support*, RFC 2002, Internet Engineering Task Force (IETF) (Oct. 1996), available at http://www.ietf.org/rfc/rfc2002.txt ("Perkins").

Rejection

Claims 1, 2, and 4-14 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Perkins and Harvey.

Claim 3 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Perkins, Harvey, and Reid.

ISSUE

Appellant argues

> that there is no motivation to combine Perkins with Harvey. Perkins may arguably be related to the tracking of a mobile device. However, Harvey is unrelated to such tracking. There is simply no hint or suggestion in Harvey that the users which are part of its computer network are mobile or if they are mobile that they need to be tracked.

(App. Br. 28).

Issue: Has Appellant shown that the Examiner erred by relying upon impermissible hindsight in combining Perkins and Harvey for enabling tracking of a mobile host as it moves its link with a network from one point of attachment to another through mapping of packets received at a unicast network address to a group address?

FINDINGS OF FACT

The following Findings of Fact (FF) are shown by a preponderance of the evidence.

1. Perkins teaches

> protocol enhancements that allow transparent routing of IP [Internet Protocol] datagrams to mobile nodes in the Internet. Each mobile node is always identified by its home address, regardless of its current point of attachment to the Internet. While situated away from its home, a mobile node is also associated with a care-of address, which provides information about its current point of attachment to the Internet. The protocol provides for registering the care-of address with a home agent. The home agent sends datagrams destined for the mobile node through a tunnel to the care-of address. After

> arriving at the end of the tunnel, each datagram is then delivered to the mobile node.

(Abstract).

2. Perkins teaches that

> [w]hen a mobile node detects that it has moved to a foreign network, it obtains a care-of address on the foreign network.
>
> . . . .
>
> A "foreign agent care-of address" is a care-of address provided by a foreign agent through its Agent Advertisement messages. In this case, the care-of address is an IP address of the foreign agent. . . .
>
> A "co-located care-of address" is a care-of address acquired by the mobile node as a local IP address through some external means, which the mobile node then associates with one of its own network interfaces. . . . Specific external methods of acquiring a local IP address for use as a co-located care-of address are beyond the scope of this document.

(§ 1.7. Protocol Overview).

3. Perkins teaches that a home agent can provide a capability to "maintain multiple simultaneous registrations, so that a copy of each datagram will be tunneled to each active care-of address" (§ 3. Registration).

4. Perkins teaches that

> In order receive [*sic*] multicasts [when visiting a foreign network], a mobile node MUST join the multicast group in one of two ways. First, a mobile node MAY join the group via a (local) multicast router on the visited subnet. . . .

> Alternatively, a mobile node which wishes to receive multicasts MAY join groups via a bi-directional tunnel to its home agent, assuming that its home agent is a multicast router.

(§ 4.4. Multicast Datagram Routing).

5. Harvey "generally relates to data transmissions in computer networks and, in particular, to a method for selective streaming of data (e.g. video) using multiple transmission protocols" (col. 1, ll. 6-9).

6. Harvey teaches that the objects of the invention include "minimize[ing] network traffic in a computer network by providing an efficient data streaming method"; "enhance[ing] the efficiency of data transport over a computer network using known unicasting and multicasting techniques"; "us[ing] IP unicast and IP multicast protocols to stream the same data to multiple users in a computer network in a manner that minimizes network traffic"; "provid[ing] selective streaming of video data from a video server to end users in a computer network such as an enterprise intranet"; "enhance[ing] bandwidth utilization in a computer network transparently to the end user"; and "enhance[ing] the transmission of video data streams across multiple segments of a computer network" (col. 1, ll. 62-67; col. 2, ll. 1-14).

7. Harvey teaches that

> [o]ne of the servers generates data, such as video content, that is desired to be received and viewed at one or more clients. To this end, it is known in the prior art to provide a so-called "tunneler" utility and, if needed, a "repeater" utility. For

> illustrative purposes, each of the network segments may be assumed to have its own tunneler 15 and one or more repeaters 17. The tunneler utility . . . receives an IP multicast signal and converts the signal to IP unicast format for delivery to an end user. The repeater utility . . . functions to receive an IP unicast signal and convert the signal to IP multicast format for delivery to other end users.

(Col. 3, ll. 25-40; FIG. 1).

PRINCIPLES OF LAW

Obviousness

The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, and (3) the level of skill in the art. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966).

"A factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning." *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 421 (2007). "[A] patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." *Id.* at 418. Helpful insights, such as identifying a "teaching, suggestion, or motivation to combine" can be useful tools in avoiding erroneous rejections. *Id.* However, care must be taken not to allow such helpful insights to become "[r]igid preventative rules that deny factfinders recourse to common sense." *Id.* at 421.

ANALYSIS

In support of the combinability of Perkins and Harvey, the Examiner argues that Appellant fails

> to fully appreciate the significance of Harvey's teachings, interpreting them in too narrow of a light, where it would have been obvious to one of ordinary skill in the art that they have broader implications. . . . Although Harvey fails to specify that the nodes in a subnet may be mobile hosts . . . the teachings of Harvey have obvious applications in a network having mobile hosts.

(Ans. 9). We do not agree with the Examiner's reasoning.

Perkins teaches protocol enhancements to allow transparent routing of IP (Internet Protocol) datagrams to a mobile host (FF 1). This is accomplished by having a home agent send datagrams destined for the mobile host through a tunnel to the mobile host's care-of address (FF 1). Mobile hosts use either a foreign agent care-of address, provided by a foreign agent, or a co-located care-of-address, a local IP address acquired through some external means, which the mobile host associates with one of its own network interfaces (FF 2). Perkins notes that the external methods of acquiring a local IP address for use as a co-located care-of address are beyond the scope of the teachings of Perkins (FF 2).

Missing from Perkins is any suggestion that the care-of address for a mobile host can be a group (or multicast) IP address. This is notable given that Perkins discusses home agents sending copies of datagrams to multiple registered care-of addresses (FF 3) and techniques for mobile hosts to join multicast groups (FF 4). Perkins touches on both these topics, but fails to discuss having a home agent send datagrams to a group care-of address to

enable tracking of a mobile host as it moves from one point of attachment to another.

The Examiner argues that while Perkins fails to specifically disclose the mapping of unicast addresses received at a second interface to group addresses of a first interface, Harvey teaches the missing limitations (Ans. 9). Furthermore, the Examiner argues that it would have been obvious to one of ordinary skill in the art to use Harvey's teachings to fill in these missing limitations (*id.*).

Harvey's teachings are generally related to data transmissions in computer networks (FF 5). Specifically, they are related to streaming of data such as video (FF 5). Significantly, every object of Harvey relates either to data transmission efficiency (e.g., minimizing network traffic) or transmitting video data streams (FF 6).

These objects are distinct from the present invention's object of enabling tracking of mobile devices. Moreover, Harvey's teachings of mapping a unicast IP signal to IP group format is shown in the context of transmitting data, between network segments, destined for multiple clients (FF 7).

To combine Perkins and Harvey in the manner suggested by the Examiner, an artisan would have had to recognize that the care-of addresses of Perkins could be group addresses or that the teachings of Harvey could be used to track a single mobile node traveling among network segments (instead of simply improving data transmission efficiency to multiple nodes). Perkins discusses topics related to transmission of data to a mobile

node through multiple care-of IP addresses and to enabling a mobile node to receive group transmissions. Yet Perkins fails to teach or suggest a group care-of IP address, suggesting that group care-of IP addresses are nonobvious. Harvey focuses on data stream transmission to multiple clients without addressing the possibility of a single node using the same group address to receive data when connected to different network segments. Because of this focus, one of ordinary skill in the art would be unlikely to appreciate the broader significance of Harvey to the extent argued by the Examiner.

Based upon our review of the evidence before us, we are unconvinced that even an artisan possessing creativity and common sense, and having knowledge of mobile node routing and group address technologies, would have reasonably combined Perkins and Harvey in the manner suggested by the Examiner, but for having the benefit of the instant claims to impermissibly use as a guide.

Accordingly, we find Appellant has met the burden of showing the Examiner erred in rejecting claims 1-14.

CONCLUSION

Based on the findings of facts and analysis above, we find Appellant has demonstrated the Examiner erred by relying upon impermissible hindsight in combining Perkins and Harvey for enabling tracking of a mobile host as it moves its link with a network from one point of attachment to another through mapping of packets received at a unicast network address to a group address.

DECISION

We reverse the Examiner's decisions rejecting claims 1-14.

REVERSED

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